

# East San Fernando Valley Transit Corridor

Alternatives Analysis Report - Executive Summary

December 2012



Metro



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## Alternatives Analysis Report EXECUTIVE SUMMARY FINAL

December 27, 2012



In association with:  
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## Abbreviations/Acronyms

<b>AA</b>	Alternatives Analysis
<b>BRT</b>	Bus Rapid Transit
<b>CEQA</b>	California Environmental Quality Act
<b>CNG</b>	Compressed National Gas
<b>DEIR</b>	Draft Environmental Impact Report
<b>DEIS</b>	Draft Environmental Impact Statement
<b>FTA</b>	Federal Transit Administration
<b>GHG</b>	Greenhouse Gas
<b>I</b>	Interstate
<b>LADOT</b>	Los Angeles Department of Transportation
<b>LPA</b>	Locally Preferred Alternative
<b>LRT</b>	Light Rail Transit
<b>LRTP</b>	Long Range Transportation Plan
<b>Metro</b>	Los Angeles County Metropolitan Transportation Authority
<b>MOL</b>	Metro Orange Line
<b>MPH</b>	Miles per Hour
<b>MSF</b>	Maintenance and Storage Facilities
<b>NEPA</b>	National Environmental Policy Act
<b>ROW</b>	Right of Way
<b>RTP</b>	Regional Transportation Plan
<b>SCAG</b>	Southern California Association of Governments
<b>SCS</b>	Sustainable Community Strategies
<b>TSM</b>	Transportation System Management
<b>VMT</b>	Vehicle Miles Traveled

## 0.0 Executive Summary

The Los Angeles County Metropolitan Transportation Authority (Metro) with the City of Los Angeles as project co-lead has undertaken an Alternatives Analysis (AA) to study the East San Fernando Valley Transit Corridor. The purpose of an AA is to define, screen, and recommend alternatives to be studied as part of a Draft Environmental Impact Statement/Environmental Report (DEIS/DEIR).

This project will enable Metro, the City of Los Angeles, and the City of San Fernando to evaluate a range of new public transit service alternatives that can accommodate future population growth and transit demand, while being compatible with existing land uses and future development opportunities. The study considered the Sepulveda Pass Corridor, which is another Measure R Project, and the proposed California High Speed Rail project. Both of these projects may be directly served by a future transit project in the study area. The Sepulveda Pass Corridor could someday link the West Los Angeles area to the east San Fernando Valley and the California High Speed Rail Project via the project corridor.

The project study area extends from Ventura Boulevard on the south, to the City of San Fernando, the Sylmar/San Fernando Metrolink Station and the Lakeview Terrace neighborhood on the north. The study area includes the two major north-south arterial roadways of Sepulveda and Van Nuys Boulevards, spanning 10-12 miles and the major north-west arterial roadway of San Fernando Road and north-east arterial roadway of Brand Boulevard.

Bordering and traversing the area are several interregional freeways including the Ventura Freeway (US-101), the San Diego Freeway (I-405), the Golden State Freeway (I-5), the Ronald Reagan Freeway (SR-118) and the Foothill Freeway (I-210). To the east is the Hollywood Freeway (SR-170). There are three major transit corridors that serve interregional trips: the Metro Orange Line (MOL), the Metrolink Ventura Line and Amtrak service, and the Metrolink Antelope Valley Line.

An overview of the project study area is illustrated on Figure 1.

### 0.1 ALTERNATIVES ANALYSIS REPORT PURPOSE AND STRUCTURE

The AA process defines the purpose and need for a project and subsequently identifies reasonable alternatives to be screened down based on a set of evaluation criteria and performance measures developed for the project. The screening is a technical analysis that considers the project's impacts and benefits to travel and mobility, connectivity, capital and operation costs, environmental, economic, and community input.

Figure 1 – Project Study Area



Source: Metro, 2012



Metro



The structure of the complete AA report and the corresponding executive summaries are as follows:

- **Section 0.2** summarizes the *Purpose and Need* for the project and details specific objectives to address mobility issues in the eastern San Fernando Valley.
- **Section 0.3** summarizes the *Preliminary Definition of Alternatives* which details the characteristics associated with the transit options under consideration.
- **Section 0.4** summarizes the *Screening of Alternatives* and the two tiered screening process used to evaluate project alternatives for the potential recommendations for further study. This involves reducing alternatives that do not meet the purpose and need. Alternatives that are recommended for further study will be analyzed in the DEIS/DEIR.
- **Section 0.5** summarizes the *Public Outreach* of community, stakeholder, and public agency outreach efforts.
- **Section 0.6** summarizes the *Recommended Project Alternatives* that are being advanced based on the final screening of alternatives.

## 0.2 PURPOSE AND NEED

The purpose of the project is to provide new service and/or infrastructure that improves passenger mobility and connectivity to regional activity centers, increases transit service efficiency (speeds and passenger throughput), and makes transit service more environmentally beneficial via reductions in greenhouse gas emissions.

### 0.2.1. Improve mobility in the eastern San Fernando Valley by introducing an improved north-south transit connection between key transit hubs/routes

The project study area contains three major transit corridors (MOL, Metrolink Antelope Valley Line and Metrolink Ventura County Line/Amtrak Pacific Surfliner), which are vital to the regional movement of residents and workers into and out of the east San Fernando Valley. These core transit services traverse and serve the study area at various geographic locations and are linked by local and Rapid Bus service. The northern portion of the study area includes the Sylmar/San Fernando Metrolink Station, which is served by the Metrolink Antelope Valley Line. The middle portion of the study area is served by the Metrolink Ventura County Line/Amtrak Pacific Surfliner via the Van Nuys Station. The southern portion is served by the MOL at the Van Nuys and Sepulveda station stops.

The extent of the study area's transit dependency is supported in part by boarding and alighting data in each corridor as well as its socioeconomic profile. For example, the north-south Metro Bus lines have some of the highest ridership in the San Fernando Valley and Los Angeles County. Offering Metro riders an improved north-south transit connection is imperative to fostering increased future travel opportunities between key regional transit hubs.

Based on the Metro travel forecast model, the number of congested roadway segments (a portion of the roadway located between two intersections) in the study area is expected to

increase from 126 to 162, a 29 percent increase in the AM peak hour and from 103 to 159, a 54 percent increase in the PM peak hour. Average speeds on these segments are expected to decrease by up to 12 miles per hour (mph) during the AM and PM peak hours. The increase in congested segments will result in lower vehicle speeds and increased travel delay in the study area, reducing mobility.

The forecasts also indicate that by the year 2035, peak-hour average vehicle travel speeds will:

- Decline in the Van Nuys Boulevard Corridor by about 4.6 mph (a 15.6 percent decrease), from 30.1 mph to 25.4 mph in the AM peak period and by about 4.3 mph (a 14.8 percent decrease) from 28.9 to 24.6 mph in the PM peak period.
- In the Sepulveda Boulevard Corridor, speeds are forecasted to decrease by about 3.5 miles per hour (an 11.3 percent decrease) from 30.9 mph to 27.4 mph in the AM peak period and by about 3.1 mph (a 14.8 percent decrease) from 30.7 to 27.6 mph in the PM peak period.
- For the study area as a whole, speeds are forecasted to decrease by about 4.1 miles per hour (a 13.4 percent decrease) from 30.5 mph to 26.4 mph in the AM peak period and by about 3.7 mph (a 14.8 percent decrease) from 29.8 to 26.1 mph in the PM peak period.

Based on travel projections from the Metro model, the number of study intersections currently operating at LOS E or F along the Van Nuys Boulevard corridor and the Sepulveda Boulevard corridor will more than double by the year 2035.

### **0.2.2. Enhance transit accessibility/connectivity for residents within the study area to local and regional destinations**

According to the Metro model, the person-trip distribution for the project study area indicates that a high number of travel trips tend to be localized to the communities within the area. Approximately 50 percent of the trips stay within the study area, with a large portion of trips occurring between the northern communities of the City of San Fernando and Pacoima and the southern communities of Mission Hills and Panorama City. These southern communities have a higher number of activity centers that include Kaiser Permanente, several high schools, and the Panorama Mall. A significant proportion of the overall study area trip distribution is to and from the Van Nuys Civic Center area, constituting approximately 52 percent of all study area trips. These general trip trends are expected to remain similar in 2035 and show a high attraction of trips between the central study area and the Civic Center area.

Because of the centralized trip patterns, transit accessibility and connectivity are integral to study area resident travel needs, especially to those who are transit dependent (35 percent). A total of 10 percent of households do not own a car and the average adult poverty ratio is 2.26 persons per acre compared to 1.08 per acre for Los Angeles County. These residents rely on Metro and City of Los Angeles Department of Transportation bus services for work and non-work trips within the study area and the greater Los Angeles County area.

By 2035, the trip pattern is expected to remain similar, with a high number of trips (approximately 50 percent) staying within the study area. Local trips will remain a significant contributor to traffic and transit trends. Therefore, providing enhanced transit connections and accessibility to surrounding destinations is critical for residents that rely on public transit.

### **0.2.3. Provide more reliable transit services within the eastern San Fernando Valley**

The existing bus service along the study area corridors does not meet the Metro on-time performance goal of 80 percent. This is directly correlated to levels of congestion and related vehicular speeds, which together reduce the mobility of area bus riders. As congestion continues to increase, the reliability of bus service for riders will also worsen. Providing transit services that are less impacted by increasing traffic congestion will provide increased reliability.

The increased congestion and reduction of speeds will increase both automobile and transit vehicle delay at intersections in the study area. The analysis indicates that the increase in average vehicle delay at key intersections in the study area are expected to increase by at least 30 seconds to possibly over two minutes at several locations during the AM and PM peak hours. Driver delay within the study area commute corridors could increase by 40 percent or more without major mobility improvements. For example, a driver approaching an intersection in the Civic Center that is currently experiencing 25 seconds in delay will now experience 35 seconds in delays by the year 2035.

Existing Metro bus performance data for the study area indicates that there are large overall differences between peak and off-peak scheduled runtimes (with an increase in runtimes from approximately 25 percent to 50 percent, between the fastest and slowest trips) and bus speeds (with an increase ranging from approximately 33 percent to 50 percent during peak periods). In the Van Nuys Boulevard and Sepulveda Boulevard corridors, there is a lack of a substantial speed advantage for the Rapid Line, as compared to the local line.

The longer travel times, slower speeds, and on-time performance during the AM and PM peak hours support the need for improved transit service in the Van Nuys Boulevard and Sepulveda Boulevard corridors.

### **0.2.4. Provide additional transit options in an area with a large transit dependent population and high transit ridership**

The Van Nuys Boulevard corridor has the seventh highest total transit boardings on the Metro Bus system. This corridor is served by Rapid Line 761 and Local Line 233, which have combined passenger boardings that are the second-highest in the San Fernando Valley, with the MOL boardings at a slightly higher number. Sepulveda Boulevard and San Fernando Road also have some of the highest total boardings of all transit corridors in the San Fernando Valley.

The demand in passenger boardings is constituted by both transit dependent and discretionary riders. The overall population density and the transit dependent population



density are both more than twice as high in the study area as in the urbanized area of the County as a whole:

- The study area average of 0.53 zero-vehicle households per acre is 77 percent higher than the 0.30 County average.
- The study area average transit dependent population of 7.04 persons per acre is 54 percent higher than the 3.21 County average.
- The study area average of 2.26 adult persons below the poverty line per acre is over two times the 1.08 County average.

Although population density and transit dependent population characteristics are expected to stay the same or improve slightly, study area population is expected to increase by almost 12 percent by the year 2035, and area employment will increase by approximately 15 percent. With the increase in population and employment growth, it is likely that there will be an increase in bus crowding.

The large number of existing riders within the Van Nuys and Sepulveda Boulevard corridors, and the projected population growth indicates that an especially large market is available if transit is further improved in the study area. The additional transit option that would be provided by the project will serve existing and future riders well.

#### **0.2.5. Encourage modal shift to transit in the eastern San Fernando Valley, thereby improving air quality**

Standards for many of the criteria pollutants monitored within the east San Fernando Valley have been exceeded multiple times during each of the previous three years of collected data (2009 – 2011). The traffic analysis indicates that travel speeds, vehicular delay and congestion will worsen by 2035. This will result in increased gas consumption and vehicle emissions in the study area. The increase in delay at the study intersections is expected to increase vehicle emissions and fuel consumption.

A primary project objective is to encourage a mode shift from automobile to transit, which would result in a reduction of mobile-source air pollutant emissions. The East San Fernando Valley Transit Corridor project would provide transportation and transit improvements that could potentially include Bus Rapid Transit (BRT), streetcar, or Light Rail Transit (LRT). Each of these transit modes would provide the study area with high-quality transit service, where currently there are limited competitive alternatives to driving. All existing corridor services, excluding the MOL running on a guideway, are slowed by mixed-flow traffic and traffic signal operations.

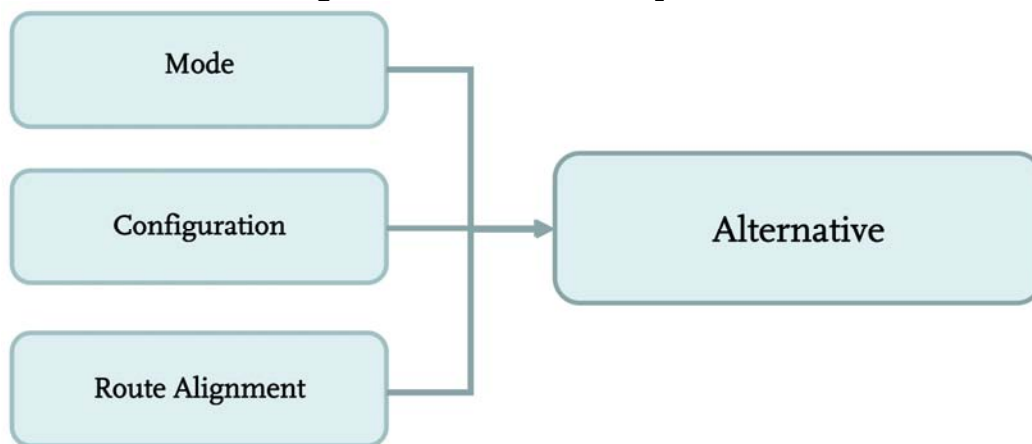
As such, the proposed project would provide the opportunity for auto drivers to choose low-emission transit modes to serve their transportation needs. By shifting mode share from personal automobiles to transit, fewer automobile trips will occur on area roadways, which would reduce the amount of time vehicles idle in severely congested traffic. To the extent that the proposed project can offer an alternative to automobile travel, mobile-source air pollutant emissions would be reduced.

### 0.3 PRELIMINARY DEFINITION OF ALTERNATIVES

The alternatives for the East San Fernando Valley Transit Corridor project that were considered for screening include the No Build Alternative, Transportation System Management (TSM) Alternative, and build alternatives which comprise of a combination of mode, configuration, and route alignment. Potential modes considered include BRT, streetcar, and LRT. Configurations consist of curbside, median-running, and side-running. All reasonable (direct as possible, serving a minimum of key area activity centers) surface-running routes have been considered to provide a direct transit connection between Sherman Oaks at the southern end of the project corridor and either Pacoima or Sylmar and the City of San Fernando at the northern end.

Figure 2 illustrates how the separate options are combined to develop an alternative.

**Figure 2 – Alternative Components**



#### 0.3.1. PRELIMINARY ALTERNATIVES

##### 0.3.1.1. No Build Alternative

The No Build Alternative represents the predicted conditions for the year 2035, includes projects in the Metro 2009 Long Range Transportation Plan (LRTP), and the Southern California Association of Governments (SCAG) 2012 constrained Regional Transportation Plan (RTP), if no transit corridor is constructed. It establishes a baseline for comparison for the other alternatives in terms of benefits and costs, and in terms of environmental analysis.

Future planned projects include capital improvements identified in Metro’s 2009 LRTP that will be implemented by 2035. This includes the installation of carpool lanes on the I-5 through Sun Valley, Pacoima, and Sylmar, and on the I-405 through the Sepulveda Pass.

The extension of the bicycle paths on Van Nuys Boulevard, Sepulveda Boulevard, and San Fernando Road/Truman Street corridors will also need to be considered as part of any major modifications to the roadway.

Although the Sepulveda Pass Corridor and the California High Speed Rail projects will not likely be completed by the project buildout, these projects are considered as they would potentially link to the project thereby providing greater regional connectivity.

### 0.3.1.2. Transportation System Management Alternative

The TSM Alternative may include relatively low cost transit service improvements and represents the best that can be done to improve transit service such as increased bus frequencies or minor modifications to the roadway network or traffic control systems. For this analysis, the TSM Alternative will consist of the No Build bus network and enhanced bus frequencies for the existing Van Nuys Rapid Bus 761. The Rapid Bus 761 would operate headways reduced from 10 minutes peak/17.5 minutes off-peak to six-minutes peak/12 minutes off-peak. Additional TSM options that may be considered include, but are not limited to, traffic signalization improvements, off-board fare collection, bus stop amenities/improvements and bus schedule restructuring.

### 0.3.1.3. Build Alternatives

Each alternative consists of the following components: mode, configuration, and route alignment.

#### 0.3.1.3.1. Mode

Below is a brief description of the main characteristics of the modal options considered for the East San Fernando Valley Transit Corridor.

#### Bus Rapid Transit (BRT)

For this project, BRT is defined as generally operating in exclusive lanes but can also operate in mixed-flow traffic. BRT typically serves longer trips with higher frequency, speed, and reliability than standard Rapid or Local bus service. BRT vehicles are high capacity articulated buses, with each bus having the capacity to serve up to 75 passengers as shown in Figure 3. Metro currently operates two dedicated BRT services: the MOL and the Metro Silver Line. BRT buses can use existing Metro maintenance facilities. The Metro bus fleet is powered by compressed natural gas (CNG). Additional design features may include transit system priority at signalized intersections, enhanced bus stations and shelters, streetscaping, and off vehicle fare collection.

Figure 3 – BRT Mode



### Streetcar

Streetcar refers to rail transit vehicles that are lighter and smaller than light rail vehicles currently operating on the Metro system, and are shown in Figure 4. Streetcars typically operate in mixed-flow lanes powered by overhead electrical power. Streetcar stations are generally more closely-spaced than BRT stops. The approximate passenger capacity is 140 passengers per car. This modal option would require a new maintenance facility since Metro does not operate streetcars as part of its transit fleet.

**Figure 4 – Streetcar Mode**



### Light Rail Transit (LRT)



LRT operates with passenger railcars on standard gauge rail, operating within exclusive right-of-way (ROW) with overhead electric power, as displayed in Figure 5. The approximate capacity is 300 passengers per two-car train set. Stations are typically located at one-mile spacing, with high platforms that eliminate the need for patrons to board vehicles via stairs. Metro currently operates LRT vehicles on the Metro Blue Line, Expo Line, Green Line, and Gold Line, however, the lack of a direct rail connection means that a new maintenance facility would be required.

**Figure 5 – LRT Mode**

### Other Modes

Additional modes such as heavy rail were excluded from initial consideration because they are unlikely to serve the Corridor in an efficient and cost effective manner. Heavy rail lines are generally located along the very busiest transit corridors. The Metro Red and Purple Lines serve some of Los Angeles' densest areas including downtown Los Angeles, the Wilshire Corridor, and the Hollywood area. Although Van Nuys Boulevard has the seventh highest bus boardings in the Metro system, the land use density along the 11-mile study corridor is not sufficient to warrant a heavy rail investment. The Sepulveda Boulevard Corridor has appreciably less boardings than the Van Nuys Corridor and similar land use characteristics. Projected ridership for either corridor would not justify the extremely high cost to build heavy rail and was not carried forward for further analysis.

### 0.3.1.3.2. Configuration

Twelve configuration options that included varying combinations of transit lanes, vehicle travel lanes, bike lanes, curbside parking, station platforms, and sidewalks were developed for a 100-foot ROW, which is a typical minimum width along both Van Nuys Boulevard and Sepulveda Boulevard.

The configurations are organized in the following manner:

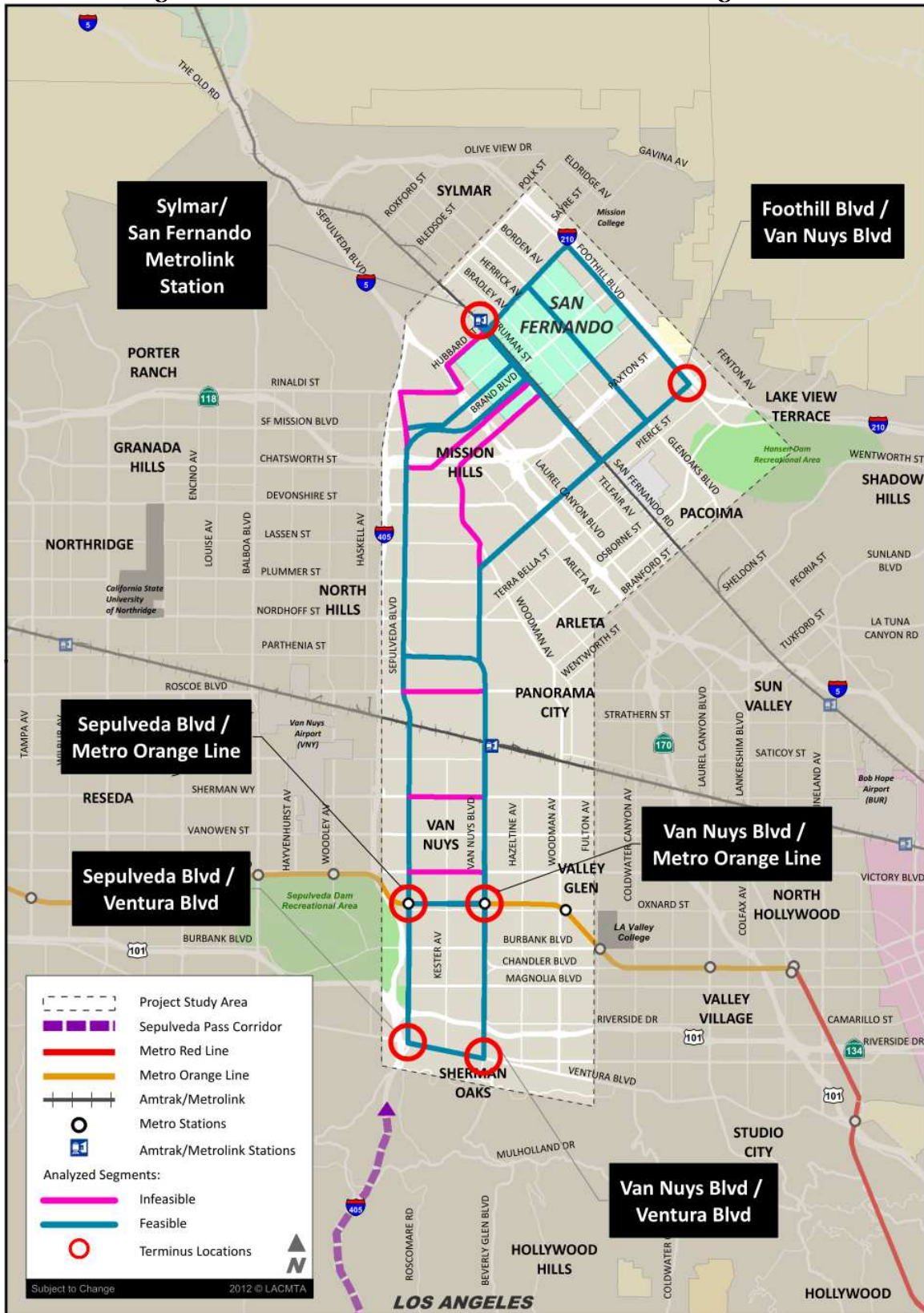
- *Curbside* – One curbside configuration was evaluated. The configuration consists of a transit lane located directly adjacent to the curb with curbside stops and two-travel lanes per direction. The transit lane would only operate during peak periods.
- *Median Running* – A total of seven median-running configurations were analyzed. The configuration consists of a transit lane located in the middle of the ROW as an exclusive guideway. Several variations were evaluated including, variations in the number of transit (one or two) and vehicle (one or two) travel lanes, station platforms (center or side), and amenities such as bike lanes and parking.
- *Side Running* – A total of four side-running configurations were analyzed. The configuration consists of an exclusive transit lane or mixed-flow lane with amenities that would include either bike lanes and/or parking between the transit lane and curb, curbside stops, and two-travel lanes per direction.

### 0.3.1.3.3. Alignment

Route segments were evaluated to determine feasible alignments in the study area. A segment was deemed infeasible if the ROW width is insufficient to accommodate the considered project modes, even with roadway widening or if a segment failed to contribute to a reasonable route alignment. Some segments that are considered crucial to maintain a viable alignment, like San Fernando Road between Sylmar/San Fernando Metrolink Station and Van Nuys Boulevard, were considered feasible even if buses must operate in mixed-flow operation. However, segments that currently lack Metro Rapid Bus service and are too narrow for BRT, LRT or streetcar, like Fox Street in the northern portion of the study area, were deemed infeasible.

Of the route segments that were evaluated, 14 route alignment options were determined to be feasible. These north-south alignments would be located within existing ROW on Van Nuys Boulevard, Sepulveda Boulevard or use a hybrid combination of both the Van Nuys Boulevard and Sepulveda Boulevard/Brand Boulevard corridors. Figure 6 illustrates the project alignments considered for the initial screening process, and those determined to be infeasible for further consideration due to physical limitations.

Figure 6 – Potential Terminus Locations and Route Segments



Source: Metro, 2012.

### **0.3.2. POSSIBLE OPERATIONS**

The possible operational characteristics include headways and system compatibility.

#### **0.3.2.1. BRT**

Potential operations for buses within the BRT lanes assumed six-minute headways during peak hours, and 12-minute headways during off-peak hours. Depending on the route alignment chosen, there is the possibility that one of the two Metro Rapid Bus lines – Metro Rapid Bus 761 (Van Nuys Boulevard) and the Metro Rapid Bus 734 (Sepulveda Boulevard) – that run north-south through the study area may be discontinued.

#### **0.3.2.2. Streetcar**

A streetcar alternative would operate on assumed six-minute headways during peak hours, and 12-minute headways during off-peak hours. Depending on the route alignment, existing bus service operating on Van Nuys Boulevard and Sepulveda Boulevard may be eliminated due to redundant service or may remain similar to the No Build Alternative.

#### **0.3.2.3. LRT**

Similar to the streetcar operation, an LRT alternative would operate on assumed six-minute headways during peak hours, and 12-minute headways during off-peak hours. The background bus network operations would be dependent on the route alignment.

### **0.3.3. MAINTENANCE FACILITIES**

All of the project alternatives would require additional space to accommodate the maintenance and storage of transit vehicles. Metro has two existing bus Maintenance and Storage Facilities (MSFs) located in the San Fernando Valley. These are Division 8 (West Valley) and Division 15 (East Valley). It is intended that one or more existing Metro bus MSFs in the San Fernando Valley would accommodate the additional buses needed for the bus alternatives. The rail alternatives (LRT and streetcar) would require new MSFs, as there are no existing facilities in the area to support the project.

A separate study will be completed for the identification of the best location for a rail alternative maintenance facility. The related site screening process would include but not be limited to property availability determinations, the cost of land, environmental review, and consideration of community acceptability.

## **0.4 SCREENING OF ALTERNATIVES**

Evaluation criteria were developed as part of an iterative process of alternatives screening to best identify which alternatives should be evaluated in the AA report and the later DEIS/DEIR. This process involves the gradual refinement of project alternative results for the eventual recommendation of the Locally Preferred Alternative (LPA).



The screening of project alternatives for the AA is organized into two tiers:

- **Tier I (Initial) Screening** – This initial analysis evaluates the project alternatives on a qualitative level to determine the alternatives that should be carried forward for further consideration.
- **Tier II (Final) Screening** – The final analysis will evaluate the project alternatives that were carried through from the initial screening process. This stage provides a more detailed quantitative analysis to further refine the project alternatives for community input and Metro Board and Los Angeles City Council review and approval.

A detailed discussion of the Tier I and Tier II screening of alternatives is available in the complete AA report.

#### 0.4.1 EVALUATION CRITERIA

There are seven main evaluation criteria, each having a set of corresponding performance measures that were developed to help screen the alternatives. They are as follows:

- Travel and Mobility Benefits and Impacts – Transit ridership, transit user benefits, new riders, vehicle miles traveled (VMT) reduction, journey time, travel time impact)
- Regional Connectivity – System connectivity, system compatibility, compliance with long range regional mobility goals
- Cost-Effectiveness – Capital costs, operations and maintenance (O&M) costs, cost per new transit trip
- Environmental Benefits and Impacts – Air quality, noise and vibration, geotechnical, visual and aesthetic, historic and cultural resources, greenhouse gases, parklands, traffic, pedestrian, and bicycle, community disruption and displacement, hazardous materials, biological resources, construction
- Economic and Land Use Considerations – transit dependence accessibility, construction employment generation, construction-related takes, economic development, and transit supportive land use
- Community Input – Local and regional plan consistency, community integration and input, integrate Backbone Bike Network and pedestrian linkages, on-street parking impacts, safety and security, and physical environment
- Financial Capability – feasibility of construction within the LRTP allocation

#### 0.4.2 TIER I SCREENING

Measures employed in the Tier I (initial) analysis are qualitative in nature. The Tier I screening was conducted in a two-stage (Stage I and Stage II) screening process to simplify the analysis. All build alternatives under consideration were ranked based on a comparative scale developed by the project team, in order to evaluate the alternatives against the goals of the Purpose and Need. This included a general evaluation of the build alternatives based on collected data that consisted of demographics, land use patterns, transit ridership, traffic



circulation, planning policies, and professional judgment related to the evaluation criteria and performance measures.

#### **0.4.2.1 Stage I**

In Stage I of the Tier I screening process, an evaluation of three modes, 12 configurations, and 14 route alignments for a total of 29 options were evaluated independent of one another to determine the most feasible options for this project.

For the modal options, the top two modes which included BRT and LRT were recommended for further study as part of the Stage II analysis. Streetcar was eliminated due to the limitation on end-to-end travel time savings as this mode is not as effective in providing mobility for long corridors as compared to BRT and LRT options. Additionally, Metro does not currently operate streetcar as part of their transit system. Therefore, there would not be system compatibility.

Of the 12 configurations, the top three were selected to move forward into Stage II of the Tier I screening. In general, configurations that had a reduced number of travel lanes or were single-lane median-running were eliminated from further analysis. Additionally, side-running configurations were removed from consideration due to the relatively high capital costs for limited mobility improvements. The configurations that were recommended included two median-running options and one peak-hour curbside option.

The top five route alignments that were chosen for a Stage II evaluation included Routes 1, 2, 4, 6 and 7. These routes include alignments on Van Nuys Boulevard and several hybrid Van Nuys Boulevard and Sepulveda Boulevard/Brand Boulevard combinations. These routes show the most potential when considering the objective of the project in relation to connectivity and accessibility.

#### **0.4.2.2 Stage II**

The Stage II Tier I screening analysis combined the two modes with three configurations and five routing alignments for a total of 15 alternatives. These alternatives were screened to determine which would be recommended for further review in the Tier II (final) screening.

Based on the Tier I screening process, six build alternatives with the highest rankings (four BRT and two LRT) were recommended for further analysis as part of the Tier II screening analysis. The six build alternatives that were recommended for further analysis in the Tier II screening process are summarized in Table 7.

### **0.4.3 TIER II SCREENING**

The Tier II screening follows Tier I and evaluates the No Build Alternative and TSM Alternative, along with six build alternatives that were carried through from the Tier I screening of alternatives.

As part of the Tier II screening, a more detailed quantitative analysis was undertaken to further refine the project alternatives. This phase included the development of operational plans, ridership forecasts, capital costs, and operational and maintenance costs for the No Build, TSM and six build alternatives. Additionally, an evaluation of the environmental benefits and impacts, and economic and land use considerations was conducted.

#### 0.4.3.1 Travel and Mobility Benefits and Impacts

The travel and mobility benefits and impacts for the alternatives include factors related to transit ridership, system-wide user benefits, system-wide new riders, VMT reduction, journey times, and vehicular travel time impacts. The primary conclusions from the analysis are:

- Alternative 7B would have the highest ridership for the BRT alternatives, with a total of 34,695 daily/10,998,315 annual boardings by 2035.
- Of the LRT alternatives, Alternative 7L would have the highest ridership by 2035 with a total of 39,800 daily/12,616,600 annual boardings as it is projected to operate at a higher average speed than Alternative 2L since it would be traveling along less congested roadway segments.
- Alternative 7B would have the highest ridership for a total of 34,695 daily and 10,998,315 annual boardings. This is attributed to the reduced roadway congestion compared to the BRT alternatives. Additionally, of the alternatives that would have portions of the alignment operating in mixed-flow traffic (Alternative 2B and 6B), this alternative would operate for a shorter distance in mixed-flow traffic lanes.
- Although the LRT alternatives are projected to have the highest ridership totals, they would potentially have fewer system-wide user benefits and new riders than the BRT alternatives. This is a direct result of disbenefits associated with a transfer for passengers traveling to/from the corridor, which is not the case in the BRT alternatives, and inconsistency in the frequency of service outside the corridor.
- In general, the constraints associated with LRT alternatives would have the greatest impact to vehicular travel times. However, Alternative 7L would also reduce the study area VMT.

#### 0.4.3.2 Regional Connectivity

Considerations of regional connectivity in relationship to the alternatives include evaluation of intermodal system connectivity, system compatibility within the region, and compliance with the Long Range Regional Mobility Goal as outlined in the regional land use plans. The primary conclusions from the analysis are:

- Alternative 2B would provide the most intermodal connectivity to Metrolink, Amtrak, the MOL, and Metro Rapid and local bus lines. There are also potential future connections with the California High Speed Rail and the Sepulveda Pass Corridor projects. This route has the possibility of connecting to approximately 35 other transit systems in the study area when possible future connections are considered.

Table 7 – Recommended Alternatives

ALTERNATIVE	2B	2L	4B	6B	7B	7L
<b>Route Mode Configuration</b>	2 BRT M7	2 LRT M4	4 BRT M7	6 BRT M7	7 BRT M7	7 LRT M4
<i>Alignment</i>	Sepulveda/Ventura - Van Nuys/Ventura - Van Nuys Blvd. - San Fernando Rd. - Truman St. - Sylmar/San Fernando Metrolink Station		Sepulveda/Ventura - Sepulveda - Metro Orange Line - Van Nuys Blvd. - Van Nuys/Foothill		Sepulveda/Ventura - Sepulveda - Metro Orange Line - Van Nuys Blvd. - San Fernando Rd. - Truman St. - Sylmar/San Fernando Metrolink Station	
<i>Route Length (miles)</i>	12.2	11.2	11.0	12.0	12.9	12.9
	Dedicated: 6.5 miles Mixed-flow: 5.7 miles	Dedicated Guideway	Dedicated Guideway	Dedicated: 9.4 miles Mixed-flow: 2.6 miles	Dedicated: 11.9 miles Mixed-flow: 1 mile	Dedicated Guideway
<i>Lanes/Direction</i>	2/3	2	2	2	2	2
<i>Number of Dedicated Transit Lanes</i>	2	2	2	2	2	2
<i>Guideway Location</i>	Median Running	Median Running	Median Running	Median Running	Median Running	Median Running
<i>Station Location</i>	Side Platform	Center Platform	Side Platform	Side Platform	Side Platform	Center Platform
<i>Estimated Number of Stations</i>	14	13	14	14	13	13
<i>Peak/Off-Peak Headway (minutes)</i>	6/12	6/12	6/12	6/12	6/12	6/12



- All new LRT infrastructure would be necessary and it would not link to other LRT lines.
- Within the east San Fernando Valley, BRT would be compatible with existing service and the MOL.
- All of the alternatives would comply with the Metro LRTP by improving mobility in the region.

#### 0.4.3.3 Cost Effectiveness

An evaluation of the cost effectiveness for the alternatives considered factors associated with the capital costs, incremental annual O&M costs, and the incremental cost for each new rider. The primary conclusions from the analysis are:

- The incremental annual O&M costs are compared to the No Build Alternative and include the costs of additional vehicles, station, and guideway maintenance for the BRT alternatives.
- The incremental annual O&M costs for the LRT alternatives include power and maintenance of vehicles and guideway maintenance.
- The lowest capital cost is Alternative 2B with a cost range from \$252 to \$440 million (2018 \$), while Alternative 4B would have the lowest operations and maintenance cost at approximately \$26.3 million.
- Of the two LRT alternatives, Alternative 7L with a cost range from \$1,700 to \$2,300 million (2018 \$).
- Alternative 6B would provide the most cost effectiveness when considering the incremental cost of each new transit trip at \$360.

#### 0.4.3.4 Environmental Benefits and Impacts

Numerous environmental measures which include air quality, noise and vibration, geotechnical, visual and aesthetic, historic and cultural resources, greenhouse gases, parklands, traffic, pedestrian, and bicycles, community disruption and displacement, hazardous materials, biological resources, and construction were evaluated in relation to each project alternative. The primary conclusions from the analysis are:

- From an overall environmental perspective, Alternative 4B would have the least amount of potential impacts.
- Air quality impacts considered short- and mid-term emissions since long-term emissions are anticipated to achieve considerable reductions due to improved fuel economy, emissions control technologies, migration to alternative fuels, and retirement of older vehicles. As a result, BRT alternatives would have less potential impacts as they would reduce more VMT and have less vehicle delay.
- LRT alternatives would produce high potential noise and vibration impacts along the proposed routes.
- All the alternatives have the potential to create visual and aesthetic impacts due to the effects of median-running guideways. However, the LRT alternatives would create the most impacts due to their overhead catenary system which supplies electricity through overhead wires. Additionally, alternatives that operate along Brand Boulevard



would have a higher visual and aesthetic impacts as this segment is highly residential.

- Based on potential impacts to traffic, pedestrian, and bicycles, Alternatives 2B and 4B would cause slightly less impacts as compared to similar alternatives.
- Alternative 7L would not generate as many impacts to planned bicycle facilities compared to the other alternatives.
- Community disruption and displacement would be significant for the LRT alternatives, more so for Alternative 2L due to potential ROW acquisition along a portion of the northern alignment.
- Construction associated with the building of an LRT alternative would cause the greatest potential impacts during the construction period.

#### 0.4.3.5 Economic and Land Use Considerations

Economic and land use considerations were evaluated for the alternatives to compare performances measures that include transit dependence, construction employment generation, construction-related takes (i.e. ROW acquisition), economic development, and transit supportive land use. The primary conclusions from the analysis are:

- All of the project alternatives would serve transit dependent populations in the project study area. Alternatives that serve the Sylmar/San Fernando Metrolink Station and operate to Van Nuys Boulevard/Ventura Boulevard would serve a greater number of transit dependent populations along Van Nuys Boulevard in comparison to alignments that traverse Sepulveda Boulevard, between the MOL and Ventura Boulevard.
- Construction employment generation would be highest under the LRT alternatives as this mode would have a higher intensity of infrastructure construction.
- Similar to the employment generation, because of the higher infrastructure needs under the LRT alternatives, these would create the most impacts compared to BRT.
- Of the BRT alternatives, Alternatives 6B and 7B would likely spur more economic development due to the community and land uses these alignments would serve.
- Of the LRT alternatives, Alternative 7L would potentially create more economic development.
- The land uses within the study area would be supportive of any of the transit alternatives under consideration.

#### 0.4.3.6 Community Input

The community input evaluates the alternatives based on public, organization, and agency input as related to local and regional plan consistency, community integration and support, integration into the Backbone Bike Network and pedestrian linkages, impacts to on-street parking, safety and security, and the physical environment. The primary conclusions from the analysis are:

- Performance measures related to local and regional plan consistency, impacts to on-street parking, and safety and security received very few or no community comments during the most recent round of community meetings.
- Determination for the community integration and support measure was based on the community survey that was distributed during the meetings. The overall sentiment was in support of the LRT mode, with Alternative 2L being favored over Alternative 7L. Of the four BRT alternatives surveyed, all four were received similar support. Alternatives 6B and 7B were tied, followed by Alternative 2B, and 4B.
- Public comments demonstrated interest in bike lanes, especially the potential to integrate a bicycle network with the LRT alternatives since LRT has a greater capacity for transporting bikes.
- The public noted concern for Alternative 7B and 7L due to the segment that would operate along Brand Boulevard and the potential impacts to the physical environment.

#### 0.4.3.7 Financial Capability

The East San Fernando Valley Transit Corridor project only has \$170.1 million allocated as part of the LRTP; any costs in excess of this amount will need to be funded by other sources. Capital construction costs for each alternative, which may include the construction of a guideway, stations, vehicles, and supporting facilities, were evaluated to determine the potential fiscal impacts and cost effectiveness of each alternative. These alternatives have been evaluated on a general level (five-percent engineered), and as the project moves forward, future phases of work, design and costs will be refined. The primary conclusions from the analysis are:

- All six build alternatives would encounter construction funding shortfalls based on the LRTP programmed funds of \$170.1 million.
- The funding shortfalls for the BRT alternatives range from \$82 million to \$449 million (2018 \$).
- The LRT alternative funding shortfalls are more or less equal at \$1.6 billion to \$2.1 billion (2018 \$).
- Alternative 2B would be the closest to the currently allocated LRTP programmed funds, followed by Alternative 6B and 4B.
- The LRT alternatives cost approximately nine to 13 times more than the allocated LRTP programmed funds, thereby far exceeding the funding that is currently available for this project.

## 0.5 PUBLIC OUTREACH

A robust public participation program was undertaken to educate stakeholders regarding the proposed project and potential alternatives related to mode and alignment that are being considered. Three rounds of community meetings, consisting of 11 separate meetings, were held – October 2011, April/May 2012 and October 2012. The outreach team focused activities on engaging and informing stakeholders about the overall project and study process.

Public outreach for the project occurred on a multitude of levels – postcard mailers, stakeholder e-mail blasts, take-ones, social media channels such as Facebook and Twitter, newspapers, a project website, community events, farmers markets, neighborhood council meetings, and neighborhood and business organizations. Metro staff also briefed representatives from the impacted offices of federal, state, and local elected officials.

#### **0.5.1. PUBLIC OUTREACH – OCTOBER 2011 – STUDY INITIATION**

This round of public outreach was intended to introduce the project and engage and gather input from the community stakeholders. The project team conducted meetings as follows:

- Elected Officials Briefing on October 6, 2011 at the Van Nuys City Hall – Marvin Braude Constituent Center
- Three community meetings were held in the Van Nuys Boulevard corridor:
  - October 24, 2011 at Panorama High School (47 stakeholders signed in)
  - October 25, 2011 at Pacoima Neighborhood City Hall (45 stakeholders signed in)
  - October 26, 2011 at Van Nuys Civic Center (58 stakeholders signed in)
- Seventeen stakeholder meetings occurred between October 6, 2011 and November 19, 2011

#### **0.5.2. PUBLIC OUTREACH – APRIL/MAY 2012 – EXPANDED STUDY AREA**

Based on comments received at the October 2011 study initiation meetings, Metro and the City of Los Angeles were urged to explore Sepulveda Boulevard as an alternative to Van Nuys Boulevard and to extend the northern terminus/origination point to the Sylmar/San Fernando Metrolink Station. Since the project study area was expanded, community outreach efforts were undertaken to obtain a broader range of community perspectives, and also incorporate recommendations from Council Districts 6 and 7 for reaching their constituents. The project team conducted meetings as follows:

- Elected Officials Briefing on March 29, 2012 at the Van Nuys City Hall – Marvin Braude Constituent Center
- Four community meetings were held in the Sepulveda Boulevard corridor:
  - April 12, 2012 at San Fernando Aquatic Center (43 stakeholders signed in)
  - April 17, 2012 at St. Mary Byzantine Catholic Church (36 stakeholders signed in)
  - April 18, 2012 at Valley Presbyterian Hospital (22 stakeholders signed in)
  - May 1, 2012 at Mission Community Police Station (38 stakeholders signed in)
- Four stakeholder meetings occurred between March 29, 2012 and April 18, 2012

#### **0.5.3. PUBLIC OUTREACH – OCTOBER 2012 – SCREENED ALTERNATIVES**

In August 2012, the outreach team conducted a public participation program to educate interested stakeholder groups and individuals throughout the study area and to update them

on the proposed project, potential alternatives related to mode and alignment being considered, and to encourage them to participate in the study process. The project team conducted meetings as follows:

- Elected Officials Briefing on September 28, 2012 at the Van Nuys Civic Center
- Four community meetings were held in the project study area:
  - Tuesday, October 2 at Sepulveda Middle School in Mission Hills (35 stakeholders signed in)
  - Thursday, October 4 at San Fernando High School in San Fernando (44 stakeholders signed in)
  - Saturday, October 6 at Panorama High School in Panorama City (40 stakeholders signed in)
  - Tuesday, October 9 at Marvin Braude Civic Center in Van Nuys (56 stakeholders signed in)
- Seventeen stakeholder meetings occurred between July 19, 2012 and November 12, 2012

#### 0.5.4. PUBLIC OUTREACH – COMMUNITY MEETING COMMENTS

The comments were considered in the screening of alternatives process as part of the community input evaluation criteria. The general comments regarding the project included:

- **Mode** – The stakeholders showed minimal support for streetcar. There was support for BRT as a safe, low cost option similar to the MOL which would also support local businesses, and provide more direct routes than rail. Overall, LRT was the favored mode as it is considered faster and carries more people in one trip, with the capacity to hold bicycles and wheelchairs, than other modes of transit.
- **Alignment** – The stakeholders preferred Van Nuys Boulevard as there are more activity centers such as government facilities, institutional, and commercial centers and better ridership in the corridor. Other comments included providing connections to the Sylmar/San Fernando Metrolink Station and the future Sepulveda Pass Corridor project. Concerns were raised over an alignment on Brand Boulevard as it would adversely impact its character.
- **Project Alternatives** – Of the six build alternatives presented to the stakeholders at the last round of community meetings, the LRT alternatives were favored over the BRT alternatives with Alternative 2L appearing as the favorite. Of the BRT alternatives, Alternative 6B and 7B were slightly favored over Alternative 2B and 4B.

#### 0.6 RECOMMENDED PROJECT ALTERNATIVES

A total of two LRT alternatives and four BRT alternatives were evaluated as part of the Tier II screening of alternatives comparative analysis to determine project recommendations. Tables 8 and 9 summarize the comparative analysis conducted for the LRT alternatives and BRT alternatives.



Table 8 – LRT Alternatives Analysis

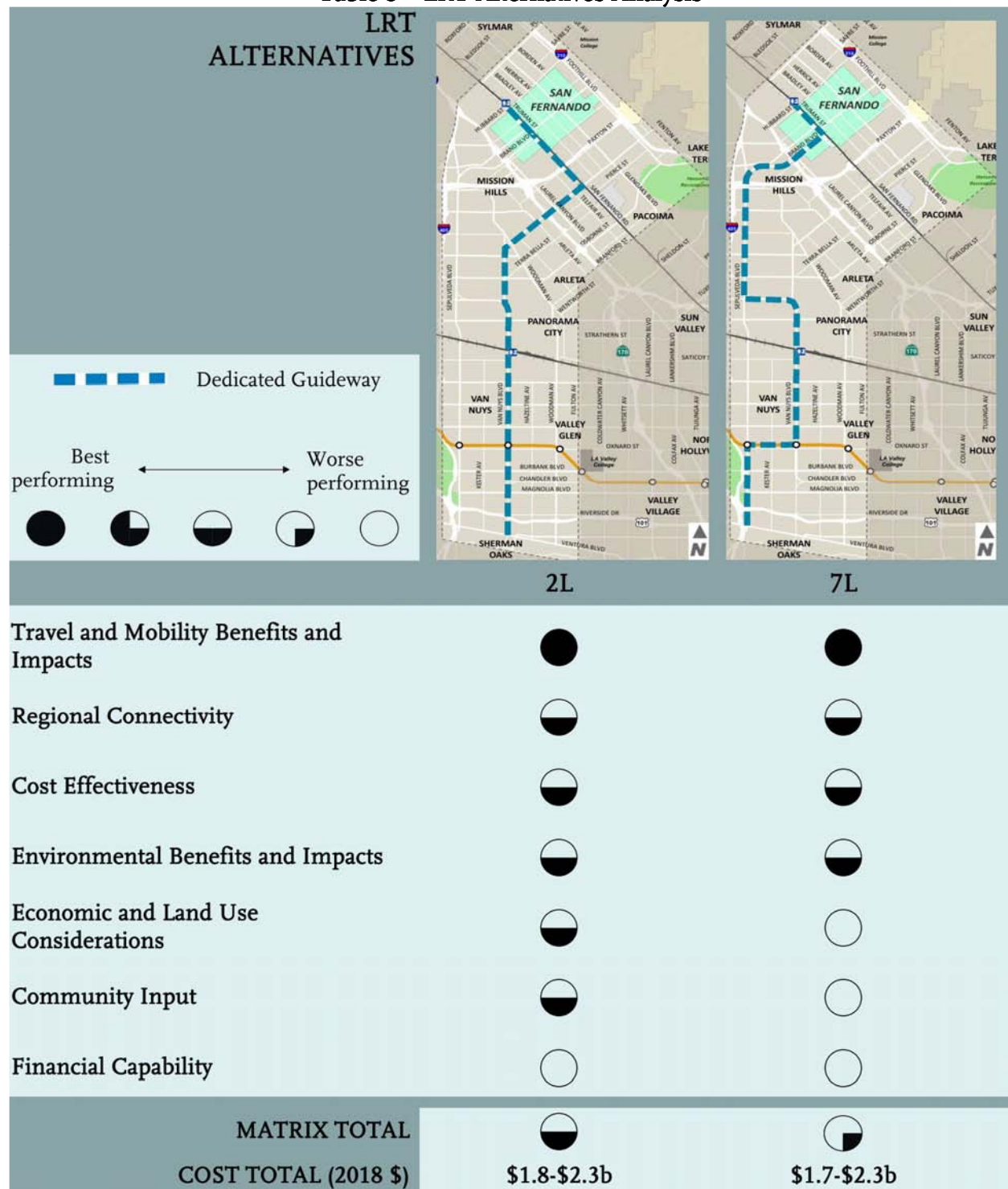
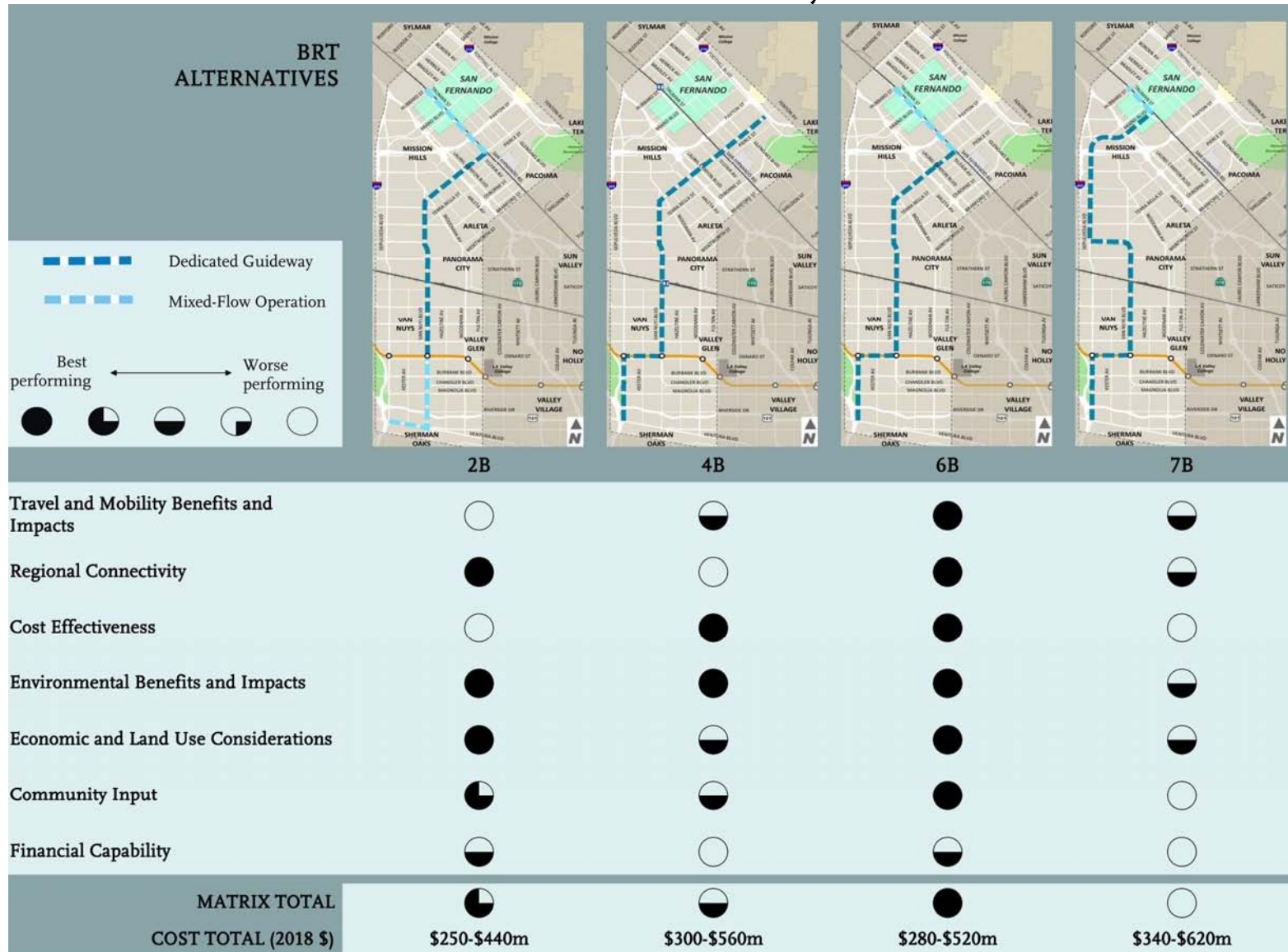


Table 9 – BRT Alternatives Analysis




The following alternatives have been recommended for further study as part of the DEIS/DEIR based on the technical evaluation and public input during the alternatives analysis:

- **No Build Alternative** – This alternative includes existing transit and highway networks and programmed improvements through the year 2035. This alternative includes projects specified in the financially constrained element of Metro’s Long Range Transportation Plan (LRTP) and Southern California Association of Governments (SCAG) 2012 constrained Regional Transportation Plan/Sustainable Community Strategies (RTP/SCS).
- **Transportation System Management (TSM) Alternative** – This alternative represents lower cost capital and operational improvements to roadways including restriping, signal synchronization, and enhanced bus services designed to improve bus speeds. It would include enhanced bus frequencies for the existing Rapid Bus Line 761 that operates on Van Nuys Boulevard and connects the east San Fernando Valley with Westwood. Enhanced bus frequencies are not recommended on Sepulveda Boulevard as future ridership along the corridor is projected to be served sufficiently with existing bus service frequencies.

**RECOMMENDED LRT ALTERNATIVE - 2L**



 Dedicated Guideway

**Route**

• The LRT Alignment would travel from the Sylmar/San Fernando Metrolink Station south/east to Van Nuys Blvd. and then south to Ventura Blvd. It could be completed in phases which could include starting the alignment at the Van Nuys Blvd./MOL Station to the south, or terminating at Van Nuys Blvd./San Fernando Rd. to the north.

**Ridership**

• With the highest projected 2035 average weekday boardings of the LRT alternatives at 37,500, this median-running alternative would provide improved travel times to key regional transit services that include the Van Nuys Metrolink/Amtrak Station, MOL, Sylmar/San Fernando Metrolink Station, and a potential connection to the future Sepulveda Pass Corridor project. This alternative also has the highest system-wide transit user benefit, and would generate the highest number of new system-wide riders.

**Operating Costs and Travel Times**

• This route would have the lowest operations and maintenance (O&M) costs among all LRT options, and would provide the lowest point-to-point travel times. It also provides a linear alignment along Van Nuys Blvd. which is ideal for LRT operations.

**Transit Dependency**

• This route would serve various transit dependent communities along Van Nuys Blvd.

**Community Plans**

• The route is consistent with several community plans (Sherman Oaks - Studio City - Toluca Lake - Cahuenga Pass; Van Nuys - North Sherman Oaks; Mission Hills - Panorama City - North Hills; Arleta - Pacoima) since it improves mobility and would increase the use of public transportation.

**Public Comment**

• Based on public comments and input, it has the highest level of community support. It provides the capacity needed for the ridership generated in the corridor, connects to the Sylmar/San Fernando Metrolink Station, and has the potential to connect to the future Sepulveda Pass Corridor project.

**RECOMMENDED BRT ALTERNATIVE - 6B OPTIONS 1, 2, AND 3**



**Route**

- The dedicated busway would:
  - Option 1 - terminate at the Metro Orange Line (MOL) allowing buses to proceed south via Van Nuys Blvd. and Ventura Blvd. in mixed flow traffic
  - Option 2 - terminate at the Sepulveda MOL Station and provide a connection to the I-405 Freeway
  - Option 3 - dedicated lane via Sepulveda Blvd. to Ventura Boulevard. The Lakeview Terrace community would connect to the BRT via the existing local bus line 233.

**Ridership**

- With the highest projected 2035 average weekday boardings of the BRT alternatives at 33,600, and the highest system-wide transit user benefits and highest generation of new system-wide riders, this generally median-running BRT alternative would provide the most intermodal connectivity, providing links to the Van Nuys Metrolink/Amtrak Station, MOL, Sylmar/San Fernando Metrolink Station, and a potential connection to the future Sepulveda Pass Corridor project.

**Operating Costs**

- This route has the lowest cost per new transit rider over all the other BRT alternatives under consideration.

**Transit Dependency**

- Along with 2B, these are the only routes that serve various transit dependent communities while providing regional connections.

**Community Plans**

- The route is consistent with several community plans (Van Nuys - North Sherman Oaks; Mission Hills - Panorama City - North Hills; Arleta - Pacoima) since it improves mobility and would increase the use of public transportation.

**Public Comment**

- Based on public comments and input, this alternative has the highest level of public support of all the BRT alternatives. It serves the Van Nuys Boulevard corridor that generates high ridership, provides connection to the Sylmar/San Fernando Metrolink Station, and has the potential to connect to the future Sepulveda Pass Corridor project.

Table 10 summarizes the recommended build alternatives that include Alternative 2L and Alternative 6B Option 1, Option 2, and Option 3.

**Table 10 – Summary of Recommended Build Alternatives**

Summary of East San Fernando Valley Transit Corridor Evaluation		
	Alternative 2L	Alternative 6B <i>Options 1, 2 and 3</i>
Mode	Light Rail Transit	Bus Rapid Transit
Alignment	Van Nuys/Ventura-Van Nuys Blvd.-San Fernando Rd.-Truman St.-Sylmar/San Fernando Metrolink Station	<p><b>Option 1</b> - terminate at the Metro Orange Line (MOL) allowing buses to proceed south via Van Nuys Blvd. and Ventura Blvd. in mixed flow traffic</p> <p><b>Option 2</b>- terminate at the Sepulveda MOL Station and provide a connection to the I-405 Freeway</p> <p><b>Option 3</b> - dedicated lane via Sepulveda Blvd. to Ventura Boulevard. The Lakeview Terrace community would connect to the BRT via an existing local bus line.</p>
Route Length (miles)	11.2	12.0
Travel Time (minutes)	35.5	41.3
Projected 2035 Average Weekday Boardings	37,500	33,600
Intermodal Connections	28	34
Cost Total (2018\$)	\$1.8-\$2.3b	\$250-\$520m

The build alternatives that are being recommended based on the screening of alternatives as part of the AA include one LRT alternative (Alternative 2L) and one BRT alternative (Alternative 6B) with three options (Options 1, 2, and 3). The BRT options under consideration include terminating the dedicated guideway at the MOL, either at the Van Nuys Station under Option 1 or at the Sepulveda Station under Option 2; Option 3 would continue on a dedicated lane from the MOL Sepulveda Station south on Sepulveda Boulevard towards Ventura Boulevard. These alternatives and any corresponding options will be further analyzed in the DEIR/DEIS.

**0.7 FUNDING**

The build alternatives that are being advanced to the DEIS/DEIR have preliminary capital costs estimates that range between \$250 million (BRT) to \$2.3 billion (LRT) Year of Expenditure 2018 dollars. The East San Fernando Valley Transit Corridor project has \$170.1 million reserved as part of Metro’s 2009 LRTP; given the significant funding shortfall associated with the alternatives, opportunities for cost reductions and project phasing will need to be identified during the DEIS/DEIR phase and subsequent project development

phases. In addition, additional non-Metro local, state, and federal funding sources may be explored.

## **0.8 NEXT STEPS**

The No Build and TSM Alternatives and two build alternatives which includes Alternative 2L and Alternative 6B Option 1, Option 2, and Option 3 will be studied in further detail as part of the DEIS/DEIR. The purpose of the DEIS/DEIR is to analyze and identify the project alternatives potential environmental impacts. The DEIS/DEIR is scheduled for completion and public review in 2014.

